| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/705,470 | 11/10/2003 | Robert L. Fair | 112056-0123 | 5732 |

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CESARI AND MCKENNA, LLP
88 BLACK FALCON AVENUE
BOSTON, MA 02210

| EXAMINER |
|---|
| WALTER, CRAIG E |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2188 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 02/14/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | Application No. | Applicant(s) |
| | 10/705,470 | FAIR ET AL. |
| **Office Action Summary** | Examiner | Art Unit | |
| | Craig E. Walter | 2188 | |

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on <u>20 November 2006</u>.

2a) ☒ This action is **FINAL**.     2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) <u>1-31</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-31</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All  b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>8/1/06</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

## DETAILED ACTION

### *Status of Claims*

1.      Claims 1-31 are pending in the Application.

Claims 1-31 are rejected.

### *Response to Amendment*

2.      Applicant's amendments and arguments filed on 20 November 2006 in response

to the office action mailed on 20 October 2006 have been fully considered, but they are

not persuasive.  Therefore, the rejections made in the previous office action are

maintained, and restated below, with changes as needed to address the amendments.

### *Information Disclosure Statement*

3.      The information disclosure statement (IDS) submitted on 1 August 2006 fails to

comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because of the

following reason:

Applicant has asked Examiner to consider 13 pages of cited reference number

four (4) "Lomet, David, et al. ...", (hereinafter "Lomet disclosure"), however the Lomet

disclosure as filed by Applicant on 27 June 2005 only contains 11 pages.

This IDS submission has been placed in the application file, but the information

referred to therein has not been considered as to the merits.  Applicant is advised that

the date of any re-submission of any item of information contained in this information

disclosure statement or the submission of any missing element(s) will be the date of

submission for purposes of determining compliance with the requirements based on the

time of filing the statement, including all certification requirements for statements under

37 CFR 1.97(e). See MPEP § 609.05(a).


### Claim Objections

4.      Claims 16, 17,19 and 28 are objected to because of the following informalities:

As for claim 16, the word "a" should be inserted between the words "to"

and "disk" as recited on line 2 of this claim.

As for claim 28, the word "values" should be inserted between "number"

and "comprises" to properly establish antecedent basis for the "one or more

magic number".

Claims 17 and 19 are objected to for further limiting claim 16.

Appropriate correction is required.


### Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

5.      Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

As for claim 1, the phrase "receiving a write operation directed to a file" renders the claim indefinite, as it is unclear to the Examiner if Applicant intended this limitation to recite an operation to write *to a file*, or a write operation for writing *the file itself*. More specifically, as currently recited, the write operation could be directed to either writing to a file, or directed to writing the file itself. The claim will be further treated on its merits based on the latter assumption. A similar rejection applies to claim 21 on line 5 of the claim.

As for claims 21 and 22, the phrase "the data buffer" as recited in lines 5-6 (of claim 22 for example) lacks antecedent basis. More specifically, a "data buffer" and a "raw data buffer" are previously set forth in the claim. Which of these two is "the data buffer" referring to?

Claims 2-10, 23-31 are rejected for inheriting the deficiencies of claim 1 and 22 respectively.

## Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5, 11, 15-20 and 22-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Hitz et al. (US Patent 5,819,292), hereinafter Hitz.

As for claims 1, 20 and 22, Hitz teaches method for detecting leaked buffer writes between a first consistency point and a second consistency point, the method comprising:

receiving a write operation directed to a file (Hitz's invention is directed to managing changes to a file system. In his disclosure, Hitz describes a Write Anywhere File-System Layout (WAFL) directed to writing new data (i.e. files) to the file system (i.e. storage system of claim 22). The files can write new inode files to the file system – col. 4, lines 6-32);

creating a data buffer associated with the write operation (referring to Fig. 10, when a new incore inode is created (1010A), an area is allocated to the inode in order to store information, a WAFL buffer structure (1010B), a set of pointers (1010C), and an on-disk inode (1010D). The pointers point to the newly created indirect WAFL buffers (1020) – col. 7, lines 5-41). Note the area needed to store these elements is created (i.e. allocated) as Hitz explicitly describes his invention as writing new data to unallocated blocks on a disk – see abstract; and

writing a buffer check control structure to a raw data buffer associated with the data buffer (again both the buffer data structure (1010B), and the pointers (1010C) are stored and associated with the inode, hence comprise the raw data buffer associated with the data buffer – col. 7, lines 5-41).

As for claim 11, Hitz teaches a method for detecting leaked buffer writes between a first consistency point and a second consistency point, the method comprising steps of:

selecting a data buffer (a buffer is selected to store the inode which

contains the meta-data file – col. 9, lines 19-49. The meta-data file comprises,

*inter alia*, a block map – col. 5, lines 48-59. Hitz further describes the block map

as consisting of information for up to 20 snapshots. Since the consistency points

are classified as points after a snapshot, the block map comprises the

information needed to ascertain the consistency point number – col. 4, lines 6-

43);

determining if the selected data buffer includes a buffer check control

structure (the system inherently makes a determination if the buffer check control

structure within an inode is present simply by referring to the data recorded within

it);

determining, in response to the selected data buffer including a buffer

check control structure, if a consistency point number within the buffer check

control structure is correct, and if so, performing a write operation of the file

system buffer (before converting to a new consistency point, the system will

perform a check sum on the fsinfo structure (containing the root inode which

comprises the consistency point information) to determine if the one of the copies

has been corrupted in some way. Once consistency is determined, the system

will continue to write the new node to the disk – col.12, lines 11-48).

As for claims 2 and 23, Hitz teaches creating the data buffer as further

comprising the step of creating a buffer control structure and a raw data buffer (the

structures previously described in the rejection of claim 1 illustrate the buffer control

structure and raw data buffer which are created when the incore inode is created (i.e. allocated)).

As for claims 3 and 24, Hitz teaches the buffer control structure as comprising a pointer to the raw data buffer (the buffer structure contains pointers to reference the 16 buffer pointers (1010C) - col. 7, lines 5-16).

As for claim 4, Hitz teaches the method of claim 1 wherein the step of writing the buffer check control structure to the raw data buffer further comprises the steps of:

creating the buffer check control structure (again, the buffer check control structure is created upon allocation of the inode); and

overwriting a portion of the raw data buffer with the buffer check control structure (a portion of the raw data buffer is comprised of the buffer structure (1010B)).

As for claims 5 and 26, Hitz teaches the step of writing the buffer check control structure to the raw data buffer as further comprising the steps of:

creating the buffer check control structure (again, the buffer check control structure is created upon allocation of the inode); and

associating the buffer check control structure to the raw data buffer in a contiguous block of memory (the buffer check is associated with the raw data buffer as it contains pointers that reference a block within the buffer itself – col. 7, lines 5-41. Note by definition a block of data is contiguous; therefore the information is inherently stored contiguously. Additionally, Fig. 10 depicts the information as being stored contiguously in blocks).

As for claim 15, Hitz teaches the method of claim 11 wherein the step of determining if the consistency point number is correct further comprises the step of determining if the consistency point number within the buffer check control structure equals a consistency point number identifying a current consistency point (col. 11, line 62 through col. 12, line 38 – the system maintains two identical copies of the root inode containing the information of the consistency point of the system. The system can then compare the current root inode with the copy to determine if the consistency point is accurate, and that no failure has occurred).

As for claim 16, Hitz teaches the method of claim 11 wherein the step of performing a write operation further comprises a step of writing a set of raw data within the data buffer to disk (all data written is written to the disk – see abstract. The data is buffered before flushed and written to the disk).

As for claim 17, Hitz teaches the method of claim 16 wherein the raw data comprises the buffer check control structure (both the buffer data structure (1010B), and the pointers (1010C) are stored and associated with the inode, hence comprise the raw data buffer associated with the data buffer – col. 7, lines 5-41).

As for claim 18, Hitz teaches the method of claim 16 wherein the step of performing the write operation further comprises a step of removing the buffer check control structure from the data before writing the file system buffer to disk (the buffered data is flushed (i.e. removed) from the buffer before it is written to the newly allocated regions on the disk - col. 12, lines 9-24).

As for claim 19, Hitz teaches the method of claim 16 wherein the step of performing the write operation comprises the step of writing only the raw data within the file system buffer to disk (col. 12, lines 9-24 – the raw data is the only data flushed to the disk during the update).

As for claim 25, Hitz teaches overwriting the buffer (col. 23, lines 45-67 – see also Figs. 23A and 23B).

## Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.     Claims 6-10, 12-14 and 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitz (US Patent 5,819,292) as applied to claims 1, 11 and 22 above, and in further view of Ganesh et al. (US Patent 6,192,377 B1), hereinafter Ganesh.

As for claim 6, though Hitz teaches storing consistency point numbers in the buffer check control structure, he fails to further teach storing one or more magic numbers.

Ganesh however teaches an apparatus for determining whether a transaction can use a version of a data item, in which he describes entries in data blocks as containing an index number (i.e. magic number). Also note that Ganesh additionally teaches a consistency point number (i.e. snapshot number) – col. 4, lines 33-41.

As for claim 12, though Hitz teaches determining if the buffer contains a buffer check control structure he fails to teach storing a magic number in said structure. Ganesh however teaches determining if one or more magic values are within the data buffer, as his system functions as to check the updated version of the block by determining the index (i.e. magic) number of the block (col. 4, lines 33-41).

As for claims 7, 8,10, 13 and 14, though Ganesh does not explicitly teach the magic number as comprising either a 64-bit value, two 32-bit values, nor the consistency point number as comprising a 32-bit value, such limitations are merely a matter of design choice and would have been obvious in the system of Ganesh. These limitations fail to define a patentably distinct invention over Ganesh since both the invention as a whole and that of Ganesh's are directed to storing a magic number used to uniquely identify the data block; and storing a consistency number, used to track certain points in time the system maintained a consistent state.

It would have been obvious to one of ordinary skill in the art at the time of the invention for Hitz to further include Ganesh's apparatus for determining whether a transaction can use a version of a data, into his own file system. By doing so, Hitz would have a means of more quickly and reliably examining and determining which particular version of updated data blocks to use in a requested transaction, which in turn would require fewer system resources, making his system overall more efficient, as presently taught by Ganesh in col. 4, lines 42-64.

As for claim 9, Hitz teaches his consistency point number as identifying a current

consistency point (again, the most recently recorded consistency point is indicative of

the system's most current point of consistency).

Claims 27-31 are rejected based on the same rationale as claims 6-10

respectively.

8.      Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hitz (US

Patent 5,819,292).

As for claim 21, though Hitz explicitly teaches all the limitations of the claim (as

per the rejection of claims 1, 11 and 20, *supra*), he fails to specifically teach his method

as being implemented on a computer readable media with instructions executed by a

processor as recited in this claim.

Examiner takes Official Notice (see MPEP section 2144.03) that implementing a

method to be performed on a file system (as described by Hitz) via the use of a

"computer readable media containing instructions for execution on a processor" in a

computing environment was well known in the art at the time the invention was made.

The Applicant is entitled to traverse any/all official notice taken in this action according

to MPEP section 2144.03. However, MPEP section 2144.03 further states "See also In

re Boon, 439 F.2d 724, 169 USPQ 231 (CCPA 1971) (a challenge to the taking of

judicial notice must contain adequate information or argument to create on its face a

reasonable doubt regarding the circumstances justifying the judicial notice)."

Specifically, In re Boon, 169 USPQ 231, 234 states "as we held in Ahlert, an applicant

must be given the opportunity to challenge either the correctness of the fact asserted or

the notoriety or repute of the reference cited in support of the assertion. We did not

mean to imply by this statement that a bald challenge, with nothing more, would be all

that was needed". Further note that 37 CFR section 671(c)(3) states "Judicial notice

means official notice". Thus, a traversal by the Applicant that is merely "a bald

challenge, with nothing more" will be given very little weight.

One of ordinary skill in the art would have been motivated to implement the

method as instructions on a computer readable media, as it is well known in the art that

such implementation is inexpensive, and easy to maintain.

### Response to Arguments

9.      Applicant's arguments with respect to claims 1-31 have been fully considered but

they are not persuasive.

10.     As for claim 1, Applicant failed to address the § 112, second paragraph rejection

set forth in the original Non-final Office action mailed 29 June 2006, and the Notice of

non-responsive Amendment mailed on 20 October 2006.   This rejection is therefore

maintained, and reiterated *supra*.

11.     As for claim 21 (selected by Applicant as being representative of the remaining

independent claims), Applicant asserts "that Hitz does not show Applicant's novel

***buffer check control structure*** as set forth in new claim 21".  Applicant attempts to

support this assertion by describing many specialized features that are allegedly novel

through reference to the specification (i.e. Applicant's Summary; Page 7, lines 14-30 to

Page 8, line 11).  For example, Applicant contends that the buffer check control

structure recited in instant claim 21 includes two 32-bit "magic" numbers that are utilized

by a file system of the storage operating system to uniquely identify the buffer check

control structure as per the description in the specification, and further contends that

Hitz fails to teach this novel structure.  These arguments however are not persuasive as

they are not commensurate in scope with the limitations of the claim.  More specifically,

Applicant has improperly asked Examiner to import claim limitations from the

specification in direct contrast to the teachings of MPEP § 2111.01, II. ("Though

understanding the claim language may be aided by explanation contained in the written

description, **it is important not to import into a claim limitations that are not part of**

**the claim**" (emphasis added)).  Applicant's digression from the teachings of MPEP §

2111.01 is further evident in the recitation of several dependant claims.  Instant claim 8

(for example) specifically defines the buffer check control structure as comprising two

32-bit magic numbers.  This recitation is an implicit omission by Applicant that such a

limitation is **not** required in base claim 21, for otherwise such a recitation would be not

necessary in the dependant claim.  Examiner correctly mapped Hitz's buffer data

structure and pointers associated with the inode structure to Applicant's buffer check

control structure as presently recited in each base claim based on Examiner's "broadest

reasonable interpretation [of the buffer check control structure] consistent with the

specification", pursuant to MPEP § 2111.

### Conclusion

12.     **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time
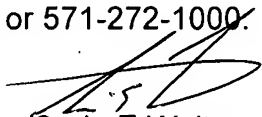
policy as set forth in 37 CFR 1.136(a).

13.     A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action.  In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action.  In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

14.     Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Craig E. Walter whose telephone number is (571) 272-

8154.  The examiner can normally be reached on 8:30a - 5:00p M-F.

15.     If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hyung S. Sough can be reached on (571) 272-6799.  The fax phone

number for the organization where this application or proceeding is assigned is 571-
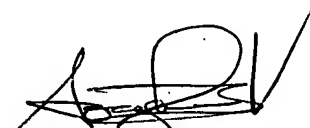
273-8300.

16.    Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system.  Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Craig E Walter
Examiner
Art Unit 2188

CEW

HYUNG SOUGH
SUPERVISORY PATENT EXAMINER
2-12-07